DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, SECRETARY
U.S. GEOLOGICAL SURVEY
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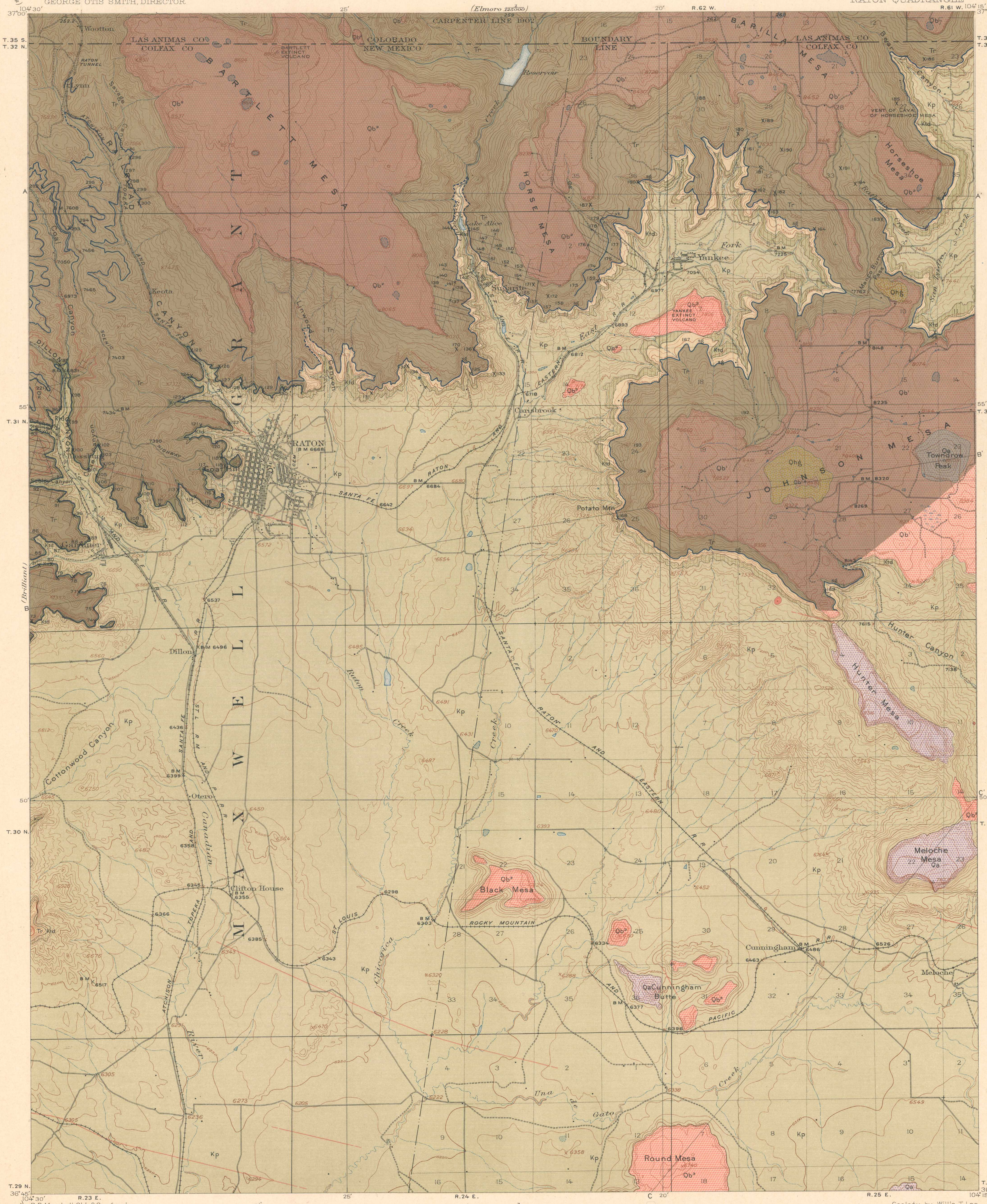
ECONOMIC GEOLOGY

NEW MEXICO-COLORADO
RATON QUADRANGLE



EXPLANATION

SEDIMENTARY ROCKS

(Areas of sedimentary deposits are shown by patterns of parallel lines; subaerial deposits by patterns of dots and circles)

QUATERNARY

Qhg — High-level gravels *(sand, gravel, and boulders)*

TERTIARY — *Eocene*

Tr — Raton formation *(sandstone, brown to buff shale, and coal beds; conglomerate at base)*

UNCONFORMITY

CRETACEOUS — *Upper Cretaceous*, *Montana group*

Kv — Vermejo formation *(dark shale, light-colored friable sandstone, and coal beds)*

Ktd — Trinidad sandstone *(massive, light-gray, feldspathic sandstone)*

Kp — Pierre shale *(drab to black fossiliferous shale; containing limestone concretions in upper part; in southeast parts of Raton and Koehler quadrangles includes representatives of Niobrara limestone and Benton shale, of underlying Colorado group, not readily separable from Pierre shale)*

IGNEOUS ROCKS

(Areas of igneous rocks are shown by patterns of triangles and rhombs)

QUATERNARY

Qa — Andesite flows and stocks *(probably intermediate in age between second and youngest basalt flows)*

Qb¹, Qb², Qb³ — Basalt lava flows *(Qb¹ oldest and highest flow; Qb² second or intermediate flow; Qb³ youngest and lowest flow; some lava of second flow is mapped with oldest flow on Johnson mesa north of Towndrow Peak)*

Dikes and sheets, chiefly basalt; some andesite and lamprophyre

ECONOMIC DATA

Coal bed outcrops *(chiefly in Vermejo formation; Sugarite, sg, Yankee yk, Savage Canyon, sc, and other coal beds in Raton formation. Coal altered to coke or graphite where in contact with igneous rocks)*

Area underlain by coal beds of workable size

⚒ Coal mine entries

X Coal prospects and location of measured surface sections

⊙ Diamond drill tests for coal

Numbers and letters refer to sections and descriptions in text.

Mine workings in 1915

Economic note: *Bituminous coking coal is extensively mined in the Vermejo and Raton formations; brick clays are obtained from the Pierre shale; basalt is suitable for road metal.*

Land lines on map are based on found corners indicated thus (+)

R. B. Marshall, Chief Geographer.
Sledge Tatum, Geographer in charge.
Topography by E. P. Davis and S. E. Taylor.
Control by R. B. Robertson and C. P. Gross.
Surveyed in 1911-1912.

APPROXIMATE MEAN DECLINATION, 1920. TRUE NORTH, MAGNETIC NORTH, 13½°

Scale $\frac{1}{62500}$

1 ½ 0 1 2 3 4 Miles

1 ½ 0 1 2 3 4 5 Kilometers

Contour interval 50 feet.

Datum is mean sea level.

Edition of Sept. 1921.

Geology by Willis T. Lee.
Surveyed in 1913.